

Abstract of the Invention

Hydraulic fracture dimensions and, optionally, fracture closure pressure and time are determined by adding particulate matter that discharges to create an acoustic signal to the proppant, allowing the particulate matter to discharge, and detecting the acoustic signal with geophones or accelerometers. The particulate matter may be spheres or fibers. The discharge may be explosion, implosion, detonation, or rapid combustion or ignition. The discharge may be triggered by fracture closure or by chemical reaction.